Macroeconomics II

8. The Facts of Growth

BSc in Economics

Luís Clemente-Casinhas

https://luisclementecasinhas.org/

ISCTE-IUL - Economics Department

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The production function

- Aggregate production function F:

$$Y = F(K, N)$$

  where Y is output, K is capital, and N is labor.

- The function F depends on the state of technology.
- Constant returns to scale:

$$xY = F(xK, xN)$$

- Decreasing returns to capital: increases in capital lead to smaller increases in output.
- Decreasing returns to labor: increases in labor lead to smaller increases in output.

Measuring the standard of living

- Countries utilize distinct currencies, thereby expressing their respective outputs in their own monetary units.
- One common method for comparison involves using exchange rates:
  - When contrasting the output *per capita* of India with that of the United States, we can calculate Indian GDP *per capita* in rupees, convert it to dollars using the exchange rate, and then compare it with US GDP *per capita*.
- The first limitation of this approach is that exchange rates can fluctuate significantly:
  - In the 1980s, the value of the dollar experienced notable fluctuations, increasing and decreasing by approximately 50% relative to the currencies of US trading partners.
  - However, it would be erroneous to conclude that the standard of living in the United States increased by 50% and then decreased by 50% compared to that of its trading partners during the same period.
  - Such a comparison using exchange rates might lead to misleading conclusions.

Measuring the standard of living

- The second limitation regards systematic differences in prices between countries:
  - In 2011, the GDP *per capita* in India, calculated using the prevailing exchange rate, stood at $1,529, in stark contrast to the $47,880 in the United States.
  - It's evident that no one could sustain themselves on $1,529 annually in the United States. Yet, individuals manage to survive, albeit modestly, on this amount in India.
  - This happens because the prices of essential goods in India, crucial for subsistence, are considerably lower than in the United States.
  - Consequently, the average person's level of consumption in India, primarily focused on basic necessities, isn't 31.3 times smaller than that of their American counterpart.
  - Typically, the lower a nation's output *per capita*, the lower the costs of essential goods and services within that country, including food and basic necessities.

Measuring the standard of living

- When aiming to compare standards of living, we achieve more insightful comparisons by addressing the two aforementioned factors: fluctuations in exchange rates and systematic disparities in prices across nations.
- The intricacies of constructing these adjustments are complex, but the underlying principle is straightforward.
  - GDP figures, and consequently GDP per capita, are recalculated using a uniform set of prices applicable to all countries.
  - These adjusted real GDP figures, often referred to as purchasing power parity (PPP) numbers, serve as measures of purchasing power either across different points in time or among various countries.

Output and happiness

- Richard Layard's findings indicate that wealthy individuals tend to report higher levels of happiness compared to those with lower incomes.
- In countries with lower output *per capita*, increases in *per capita* output are associated with greater overall happiness. This relationship becomes less pronounced in nations already enjoying higher levels of economic prosperity.
- Easterlin paradox: once individuals' fundamental needs are met, higher personal income doesn't necessarily lead to increased happiness. Instead, what appears to be more influential is not the absolute level of income, but rather how one's income compares to others.

Malthusian Trap

- The Malthusian Trap corresponds to a scenario where productivity gains coincide with a reduction in mortality rates and a subsequent population increase. As a consequence, income *per capita* remains unaffected.
- According to Thomas Robert Malthus, the greater availability of food would incentivize people to have more children, as they could now afford to support them, consequently leading to a surge in the total population and a decline in *per capita* income levels.
- In essence, Malthus posited an inverse relationship between human population growth and living standards, with the former adversely affecting the latter.
- Thus, resource limitations acted as a constraining force on human population growth.

References

- Blanchard, O. (2017). *Macroeconomics. Global Edition.* (7^{th} ed.). Routledge.